The NORTH QUEENSLAND NATURALIST

CAIRNS

Journal of

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OBJECTS: The furtherance of the study of the various branches of Natural History and the preservation of our heritage of indigenous fauna and flora.

MEETINGS: Second Tuesday of each month at Cairns Education Centre, Cnr. Morehead and Lazarus Sts., Bungalow, 8.00 p.m.

FIELDS DAYS: Sunday before meeting. Notice of place and time given in "Cairns Post".

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Each author is responsible for the facts and opinions expressed in his or her article.

LIFE HISTORY OF THE NORTH QUEENSLAND DAY-FLYING MOTH, ALCIDES ZODIACA BUTLER (LEPIDOPTERA:URANIIDAE)

by N.C. Coleman* and G.B. Monteith+

INTRODUCTION

Most moths are nocturnal, but a notable exception is the subfamily Uraniidae which includes four genera and about twenty species scattered through the tropical regions of the world. Three of these genera are entirely diurnal in habits and their large size, brilliant colours and tailed hindwings lead many casual observers to assume they are butterflies. Chrysiridia occurs in Madagascar and Zanzibar and one of its species, madagascariensis, is often hailed as the most beautiful insect in the world with its fiery, opal-like patterns of green, gold and red on a velvety black background. Almost as beautiful is the genus Urania which has species in northern South America and on the islands of the West Indies. The third day-flying genus is Alcides which has several species centered on the island of New Guinea and nearby land masses. Alcides zodiaca Butler, sometimes called the "Zodiac Moth", is our only Australian representative of these diurnal moths. It occurs at Iron Range and from Cooktown to Mackay and is sometimes extremely abundant, especially in lowland areas. Species of Alcides do not quite measure up to the magnificence of Chrysiridia and Urania, but Alcides zodiaca is still a striking insect with broad bronze bands on blue-black wings with white tails. It is very similar to the New Guinea species Alcides agathyrsus Kirsch and the two obviously arose from a common ancestor.

The fourth genus of the Uraniinae is Nyctalemon which includes several con ventionally nocturnal species in the Indo-Pacific area. The only one to occur in Australia is Nyctalemon patroclus L. which ranges from India and China through to North Queensland where, like Alcides zodiaca, it occurs at Iron Range and in the Cairns region. N. patroclus is a large brown moth with a longitudinal white band on each wing and with two prominent white tails on each hindwing; though common in New Guinea it is very rare in Australia most specimens having been taken in the wet lowlands near Babinda.

Most day-flying uraniids seem to share similar flight behaviour in the adults. They often appear in large numbers which persist for a relatively short time during which they feed in swarms at flowering trees; often they build up to such large numbers that they bend the branches of their night--time roosting trees. This behavious is noted for Chrysiridia by Eltringham (1923) and for Urania by Guppy (1907) and Gosse (1880). Similar observations for Alcides zodiaca are by Alexander (1933), who noted hundreds roosting in two small shrubs at Yarrabah, by LeSouef (1979) who mentions sightings by Clive Pratt at Shiptons Flat (near Helenvale) of swarms which broke small branches from trees, and by R. Straatman (pers. comm.) who reports great numbers migrating near Kuranda. A. zodiaca is typically a high-flying insect, keeping up near the canopy where they vigorously dogfight with other insects, even the larger Birdwing butterflies. One of their characteristics is the spiralling upwards flight of pairs and small groups, often going hundreds of feet in the air.

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* Edmonton, North Queensland (deceased April 8, 1981).
+ Queensland Museum, Brisbane.

Larval food-plant

Many collectors have searched for the larval food-plant of this common, conspicuous moth without success. We record here its discovery. In February, 1980, one of us (Coleman) collected a number of boldly-marked caterpillars on foliage of a large canopy vine which had been brought to the ground by logging operations in rainforest on the upper Mulgrave River (Goldsborough Road), via Gordonvale. These were reared through on leaves of the same vine and eventually emerged as Alcides zodiaca. The plant has been identified as Omphalea queenslandiae F.M. Bail. (Euphorbiaceae).

This food-plant has since been confirmed by detective work by Don and Irene Kajewski, of Tolga, and Garry Sankowsky of Tamborine. In August 1979 the Kajewskis had collected pupae south of Babinda which emerged as Alcides, but the food plant was not found. In May 1980 Garry Sankowsky visited the spot with the Kajewskis, found more empty pupal shells, and concluded that a large, defoliated, canopy vine there might be the food-plant. Armed with the evidence of the Mulgrave River larvae mentioned in the preceding paragraph, the Kajewskis revisited the site in April 1981. This time many larvae were found on the vine which was later confirmed by Bernie Hyland of CSIRO, Atherton, as Omphalea queenslandiae. In May, 1976, Garry Sankowsky had noted a female Alcides moth laying eggs on ferns near Fishery Creek, south of Gordonvale. When this site was rechecked in July, 1981, stems of Omphalea were found, obviously having provided the egg laying stimulus (G. Sankowsky, pers. comm.)

Omphalea queenslandiae is a large, uncommon, tree-top vine with a stem diameter up to 15cm. It has large, glabrous, alternate, broadly ovate leaves which reach about 15cm by 10cm in size. The leaf petioles bear a pair of bulging glands where they join the leaf blade; in this respect they resemble the leaves of the common North Queensland vine, Adenia heterophylla (Passifloraceae), but Omphalea is readily separated from Adenia by its lack of climbing tendrils. Omphalea bears large, globular fruits, up to 12cm in diameter, each of which encloses 2-4 spherical seeds which were eaten by the aborigines under the name "Camboo". Cut stems ooze a viscous, sticky, transparent sap. In Australia, O. queenslandiae occurs at Iron Range and in mainly lowlands between Bloomfield and Innisfail. However, it does reach the edge of the Atherton Tableland at altitudes as high as 680m (B.P.M. Hyland pers. comm.). It has also been collected in New Guinea and the Solomon Islands. Clearly the high-canopy habit of the vine explains in part why this larval food-plant of Alcides has remained undetected for so long. This plant's habit also correlates with the moth's high-flying behaviour.

The genus Omphalea is rather obscure with about 20 species in the new and old world tropics. O. queenslandiae is the only Australian species. Search of the literature reveals that Chrysiridea madagascariensis breeds on Omphalea biglandulosa in Madagascar (Eltringham, 1924), Urania sloanus breeds on Omphalea triandra in Jamaica (Gosse, 1881), Urania boisduvali breeds on Omphalea triandra in Cuba (Macleay, 1834) and Urania leilus breeds on Omphalea megacarpa in Trinidad (Guppy,1907). There is thus a strikingly close association between these diurnal uraniid moths and Omphalea in widely separated parts of the world, so close in fact that we may speculate that the association dates from before continental drift separated the southern continents.

The only published reference to food-plants for other species of Alcides is Szent-Ivany and Carver (1967) who record Pittosporum sp. for Alcides agathyrsus in New Guinea. However, Mr. Ramon Straatman, now of Kuranda but with many years experience with Lepidoptera in New Guinea, informs us that the common food-plant there is Endospermum formicarum Beccari, a small tree with hollow twigs inhabited by ants. He states that this same plant is also the food-plant of the nocturnal uraniine, Nyctalemon patroclus, in New Guinea. Interestingly, Endospermum also belongs to the Euphorbiaceae and is placed in the same subfamily as Omphalea. Pittosporum is quite unrelated and requires confirmation as an


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Alcides food-plant. Although the genus Endospermum does not appear in standard works on the Australian flora the Queensland Herbarium holds material of four species from North Queensland, including Endospermum formicarum, itself, from "Cape York". Both E. medullosum and E. myrmecophilum occur south of Cairns and resemble species of Macaranga. Considering the close relationship between Alcides zodiaca and A. agathyrsus, it will be worth investigating whether, in North Queensland, either Alcides zodiaca or Nyctalemon patroclus utilizes any Endospermum species as food-plant.

The conspicuous behaviour and bright colours of these uraniid day-flying moths suggest that they may have toxicity which protects them from bird attack. This is further indicated by the fact that, in New Guinea, Alcides agathyrsus is the model for uncanny mimicry by a swallowtail butterfly, Papilio laglaizei (Straatman, 1975). Normally suspected toxicities are confirmed by reference to the larval food-plants which are also toxic. Although the Euphorbiaceae contains many toxic plants there is no direct evidence that Omphalea or Endospermum are toxic, although crushed leaves of Omphalea have an acrid smell. Seeds of Omphalea were eaten by native people in both Australia and Trinidad, and leaves of Endospermum are used to wrap cooking foods in New Guinea (Paijmans, 1976).

Larval description and behaviour

Larvae of several species of Uraniinae have been described and/or figured, viz. Nyctalemon patroclus (Hampson, 1895, fig. 56, p.110), Chrysiridia madagascariensis (Eltringham, 1924, plate 22, p.443), Urania leilus (Guppy, 1907, plate 26) Urania sloanus (Gosse, 1881). All have the same general form, being thick fleshy caterpillars with a prominent pattern of rings and blotches and with a sparse vestiture of setae set upon small tubercles. In Urania and Chrysiridea some of the body setae are elongated with clubbed tips. All have the full complement of five pairs of abdominal prolegs.

Larvae of Alcides have not been described, but a photograph of those of Alcides agathyrsus appears in D'Abrera, 1975, (p.60). The figures and brief description given here for Alcides zodiaca are based on photographs taken by one of us (Coleman). Unfortunately specimens were not preserved. The smallest larvae collected were 15mm long and these reached about 32mm in length and 6mm in diameter before pupation.

Smaller larvae have a ground colour of black with a pattern of transverse white bands, usually three per body segment. The white rings may be broken laterally in the middle region of the abdomen. The rings are absent on the second thoracic segment, above the first proleg and behind the fourth proleg, giving the appearance of three broad, transverse dark bands at these spots. Each proleg has a pair of short, longitudinal pale bands above its base. The head, the dorsal surface of the thoracic segments and the thoracic legs are light red. The prolegs and claspers are yellow. There are sparse short black setae on the head and forming an irregular ring around each body segment; these are often white-tipped and those on the dorsal surface are mounted on small conical tubercles.

In later instars the appearance of the larva changes considerably. The number of transverse white rings doubles to six per segment, separated by very narrow bands of black. The three broad dark bands caused by the partial absence of white rings on the second thoracic segment, the segment above the first proleg and the segment behind the fourth proleg remain but are marked by red blotches on the dorsal surface. In the final instar the red blotches darken to bright crimson and cover most of the dorsal surface of the thorax. The setae remain similar to those of earlier instars and are never long and clubbed as in Urania and Chrysiridia.

An unusual feature of the larvae of this group of moths is their ability to escape attack by suddenly dropping from the foliage on a thread of silk, afterwards climbing the thread to resume their original position. This is

graphically described for Urania spp. by both Guppy (1907) and Gosse (1881), the latter reporting descents from trees forty to fifty feet high. Species of Alcides seem to share this ability. The photograph of A. agathyrsus larvae in D'Abrera (1974) shows them suspended on silken threads, and Ray Straatman confirms this from his own observations on A. agathyrsus in New Guinea. The pupae of A. zodiaca collected by the Kajewskis near Babinda were all in crevices, etc., 1-3 metres above the ground; some of these pupae were still connected to the food-plant vine above by a strong silk thread. This indicates that larvae of A. zodiaca also utilize silken threads for descent.

Pupation takes place in a strong, but thin and transparent cocoon formed between one or two dead leaves. This accords with observations on pupation in both Chrysiridia and Urania.

The eggs of A. zodiaca collected by Garry Sankowsky were spherical with about 25 longitudinal ridges. They bore an equatorial band of reddish blotches, some of which extended on to the upper hemisphere. In structure they are similar to eggs described for Chrysiridea and Urania.

ACKNOWLEDGMENTS

We are most grateful to both Mr. Ray Straatman and Mr. Garry Sankowsky for permission to cite their observations on these fascinating moths. Mr. B. Hyland of CSIRO, Atherton, identified and gave information on Omphalea, while staff of the Queensland Herbarium provided further details. Maria-Ann Wrench, of the Queensland Museum, prepared the illustrations from colour slides.

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ILLUSTRATIONS (PAGE 4)

URANIINE MOTHS OF NORTH QUEENSLAND

1. The nocturnal Nyctalemon patroclus (wing span 120mm).
2. The diurnal zodiac moth, Alcides zodiaca (wing span 100mm).
3. Egg of A. zodiaca.
4. Omphalea queenslandiae (Euphorbiaceae), larval foodplant of A. zodiaca.

5/6 Older and younger larvae of A. zodiaca.

7. Detail of larva of A. zodiaca.

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CARING FOR 'KIDNA'

by Andrew Dennis

Kidna is a baby echidna (Tachyglossus aculeatus) who arrived at the Cairns Pet Centre on 9th December 1980. He was found wandering on the road on the Tablelands. He weighed half a pound and was small and weak when I first got him and I estimated his age at one month. He had lots of black fur and a few yellow spines and was no bigger than a man's fist. His attempts at walking were miserable and he just slid around on his belly for the first month.

During the first week he ate Animalac Milk mixture for young animals. At this stage he had about two lids full or half a nip of milk per feed. I then introduced him to a mixture of 1½ tablespoons full cream powdered milk, 2 teaspoons cornflour, 1 teaspoon Prolac, 3-5 drops Pentavite and beaten raw egg. Vitamin E oil was also added to this mixture because, on waking, his eyes were stuck together and caked with matter. Once he was on the Vitamin E they cleared up.

After one month his weight was one pound and he was beginning to walk; although still unsteady and slow, it was walking. At this stage I tried him on termites and ants but he showed no interest and after this I tried him with them about once a week. He wasn't a very demanding baby at this stage as he slept most of the day and only woke in the evenings for his feed which was now about ¼ to ½ ounce. Occasionally if he had a big meal one day he would skip a meal and sleep for two days. Once when he had been one or two months in my care he went for four days without eating and I was panicking but he ate quite well afterwards.

After two months he was 1¼ lbs. and eating ½ to 1 oz. of milk mixture per feed and waking slightly earlier each evening. He still showed no interest in termites or ants. He was growing continually and his spines were larger, stronger and becoming a straw colour and not so many were hidden by his long black fur.

At three months he was 1¾ lbs. and his spines were about one inch long, strong and sharp. It was now that he first sampled termites. He started off just licking up a few and then losing interest but after a week he was eating many more. At this stage he got diarrhoea and his weight dropped to 1½ lbs.

By the fourth month he was 2 lbs., very strong and would not stop eating termites till there were none left, then he would search about the yard for ants. Although he got plenty of ants and termites he hardly ever showed signs of going off his milk. From three months on he would drink anything from 2 to 4 ozs. as well as his generous helping of ants and termites.

Between four and five months (when we let him go), his weight fluctuated between 2 and 2½ lbs. I thought this was due to not enough solids and no matter how much I put in front of him he would eat the lot.

Another problem that arose was that some of his spines or needles broke, and on close inspection I noticed that a few of them had constrictions near the base and middle which I thought could have been due to a lack of some necessary vitamin or mineral.

From three months on he became very friendly and came to my voice or smell or the sound of termite mounds being chopped open. At four months he was waking at 11 a.m. which was difficult as I was at school and Mum would put him in a 2½ ft. high enclosure made in my aviary. Here he would eat termites and then, showing no fear, he would climb out by wedging himself in the corner and edging his way up. Once out he would wander about the aviary and climb up a brick wall on to a 3 ft. shelf and then up another 15 ins. into a dry fishtank. It was on these escapades he damaged his spines.

Because he obviously needed the extra solids and he wanted to wander we decided to let him go. He proved he was strong enough by ripping up the carpet

in my bedroom.

After consulting with the National Parks and Wildlife Service we decided to let him go at Davies Creek National Park and did so on April 24th 1981.

We all miss him greatly.

--oOo--

NORMAN CLYDE COLEMAN

Norman Clyde Coleman died on 8th April, 1981, as a result of burns received when his home was destroyed by fire during the early morning of the previous day.

News of this remarkable man's death shocked not only his many friends and associates in Far North Queensland but also field naturalists at national and international level. Raymon Mascord, acknowledged as Australia's leading arachnologist, was quoted in the 'Cairns Post' of 20/4/'81 as saying -

"It will probably never be known by the people of Australia, and particularly of North Queensland, just how much Clyde contributed to the natural history of the North. With regard to arachnology he advanced the knowledge of our northern species in leaps and bounds over the past fifteen years. He contributed so many new species to our lists that it will take many years to have them all named and placed in their correct familial and generic order. The new species he found in the north number hundreds. Many of the genera he discovered were only known in other countries before Clyde found them in and around Edmonton."

Spiders were not his only interest. His dedication as a collector extended to all fields of natural history, while his expertise as a nature photographer won him wide recognition. As a bushman he was superb; he knew every inch of the Cairns hinterland and coastal lowlands, a knowledge he shared unselfishly with both amateur and professional naturalists.

Clyde was born at Stannary Hills, near Herberton, on March 20th 1913, the fifth child of a family of eleven. His parents were Charles Henry and Martha Britannia Coleman. The father was a teamster who carted firewood and supplies to the tin mines which supported Stannary Hills on Eureka Creek. Large families were not rare on the mining fields in those days, and these survived through the co-operative efforts of all members of the unit. From early childhood children were allocated chores and the one chore Clyde remembered all his days was watering the sixteen draught horses of his father's team. After school he and his brother drew water from a well by windlass to fill the drinking trough which the thirsty beasts emptied far too rapidly in the opinion of the two small boys. Naturally their father insisted that water had to be continually drawn until the last horse had drunk its fill.

The Coleman children attended the Stannary Hills State School but Clyde was a disinterested pupil apart from the field trips guided by the head teacher, a Mr. Johnson, who taught the children to love the natural environment and kindled an interest in Clyde for which the future naturalist was forever grateful.

Leaving school at an early age, Clyde and his brother followed the many occupations of bush workers including mining, cane cutting, sugar growing, until the outbreak of World War II drastically changed his life. Joining the army Clyde served as an army electrician with a unit in Darwin. He saw further service in the Islands and joined the army of occupation posted to Japan at the end of the Pacific war. There he saw the devastation of Hiroshima caused by the atomic explosion. He also saw the care of the Japanese farmers for their soil and heard their saying that 'every grain of soil in Japan has passed through human fingers'. Clyde's army experience had a profound effect on his thinking. Upon discharge he decided that he must acquire a trade and, with this as a base, further his education. A rehabilitation course qualified him as a motor mechanic and for eight years he underwent a course of study with an orientation towards science subjects.

Edmonton is a small township about 15 kilometres south of Cairns and here Clyde Coleman settled. He was an indefatigable worker. During his lunch hour he collected specimens within reach of his work place. At his home he carried out experiments in horticulture, built up a wide scientific library, and equipped himself with microscopes and sophisticated photographic gear. In addition he wandered far into both wet and dry natural environments collecting, and demonstrating to students and scientists, the natural history wonders of the northland. Also he found time to contribute to scientific journals and write letters to the media and to his many friends and contacts.

For over twenty years Clyde had been a member of the North Queensland Naturalists Club and at the time of his death was the Club President and its representative on the Cairns and Far North Environment Centre. He was a foundation member of the Cairns branch of the Wildlife Preservation Society of Queensland and a member of its executive committee since 1968. His value as a counsellor to these organizations can never be overestimated. He was a reserved man who seldom spoke on a subject unless specifically invited to do so, then his comments were invariably sound, his judgments faultless, and he spoke with wisdom and authority.

Although sixty-eight years old, age had not impaired his efforts in the field of natural history and his death can only be regarded as tragically premature. At the funeral service on 10th April, Archdeacon the Rev. Tung Yep presented a profile of the deceased and Doctor James Wright delivered a moving panegyric to commemorate his passing. The interment followed at the Cairns Plaque Cemetery where a great many friends gathered at the graveside.

Many tributes and messages of affection have been received from the organizations of which he was a member, or whom he had assisted during his lifetime. These tributes would have surprised him as he had the humility of a great scholar and teacher. To quote Ramon Mascord once more -

"He encouraged me, and if I have succeeded I owe most of my success to that quiet, shy and unassuming man we knew as Clyde Coleman."

--oOo--

MEMORIAL SHIELD

At the May meeting of the N.Q. Nats Club it was decided that a competition would be held annually for the best contribution to the club journal over the year, the name of the winner to be engraved on a permanent "Clyde Coleman Memorial Shield" which would be hung in the Education Centre (or the current Club meeting place).

This award will begin next year. Closing date for the first issue will be 31st March and for the second, 30th September. Judging can then be done from the year's journals, by a panel to be appointed, and the winner announced at the Club's Christmas breakup.

The judging panel will be looking for the best observations carried out in the natural history field and not necessarily the best scientific article. All interested in the furtherance of the study of our indigenous flora and fauna are invited to enter.

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From the Treasurer -

Just a reminder that subscriptions are due for the year September 1981 - September 1982.

Please note subscription rates itemised on front cover.

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MITRIDAE - VEXILLUM RUGOSUM

by Barbara Collins

In December some Mitridae collected in September/October began egg laying. The first I noticed appeared to be single spherical eggs with a gelatinous protective covering arranged in precise strands of approximately 12-15 eggs (Fig.1). These could have been attributed to either Vexillum plicarium (L.1758), Vexillum rugosum (Gmelin 1791) or Vexillum caffrum (L.1758), all of which were in the acquarium.

Later I noticed Vexillum rugosum in the process of laying her capsules. (Slide). Her eggs were creamy white and spherical and encased in a gelatinous circular capsule about 5mm in diameter (Fig. 2). They contained perhaps 100 eggs. Several capsules were laid in the one evening and quite a number over a 2-month period. Study and accurate time keeping were made difficult by an attack by an organism resembling a 'fluke', white and sluglike in appearance and about 2mm in length. Under the microscope it was vastly different (Fig 3). It appeared to be a segmented worm comprising about 16 segments. It caused the destruction of numerous capsules by concentrating in numbers about the top of the capsule and penetrating, allowing the water to enter and the worms to invade and eat the eggs. All that would be left were ragged remnants of the capsule which would eventually disintegrate. I managed to follow through by observing the different stages of development in different capsules.

After the first laying (Capsule 1) in which the eggs were tiny, white and fairly separate from each other they would enlarge slightly, darken and sink to the bottom (Capsule 2) taking about 3 days. Shortly after, movement was visible and appearance was very light brown and white. Unhatched eggs were still in the capsule at the bottom (Capsule 3). After another 1-3 days the veligers were very active, quite visible, dark brown with white 'shell' (Capsule 4). Shortly after the capsule would either rupture or disintegrate and the veligers would be freed into the water. Within the capsule their movement resembled a miniature beetle in flight. Unfortunately at the time of hatching, I was unable to obtain microscopic photos so the drawings (Fig. 4) were the best I could manage of the rapidly moving veligers on the microscope slide.

After 3 days none of the veligers were visible in the water and obviously did not develop past this point.

--oOo--

A RARE BIRD

by Dawn Magarry

Will we or won't we? The 30th May 1981 turned out dull and showery and we had planned a weekend in the Davies Creek Forestry area. If it was to rain here in Cairns it surely would high up in the rainforest. We were pleased we decided to go as it turned out lovely and sunny and we got a good count of birds along the old logging tracks. Half way down the range on the way home we stopped to investigate a short track and there, feeding in the casuarina trees, was a Blue Faced Finch. There were three of us present and all were sure of our identification. The blue of the face and green of the back and underparts were not as bright as we expected though we did see the reddish rump, so we concluded that it was a female. How lucky can you be, as there are very few recorded sightings of this rare finch.

--oOo--

Contributors, please -

The regular publication of this Journal depends mainly on two things - availability of material to print and money with which to print it. The money is no problem but articles short or long are always wanted. Each one of us is continually observing happenings in nature that would be of interest to others so let your editor have your observations. Don't let inability to write fluently deter you - if necessary send only notes.

--oOo--

Vexillum caffrum

Vexillum plicarium.

Vexillum rugosum

FIG I

Natural size

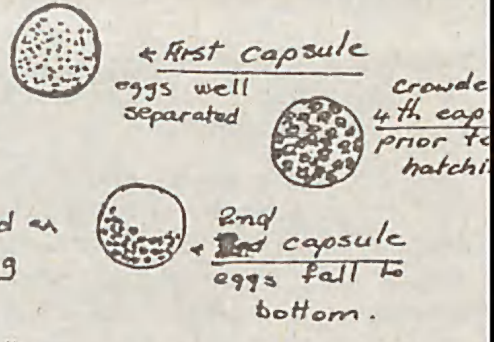
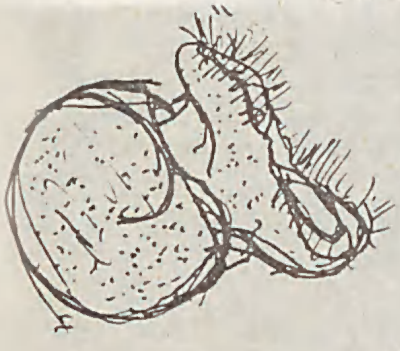


FIG 2.

Slightly larger than natural size.

FIG 3



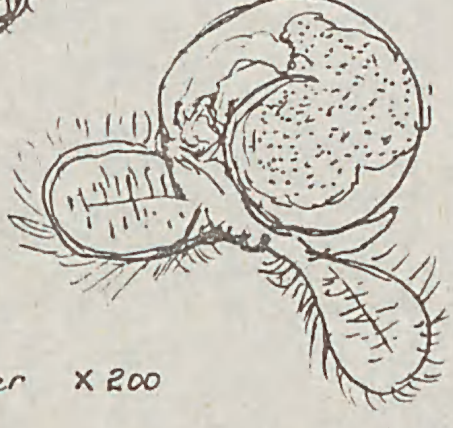
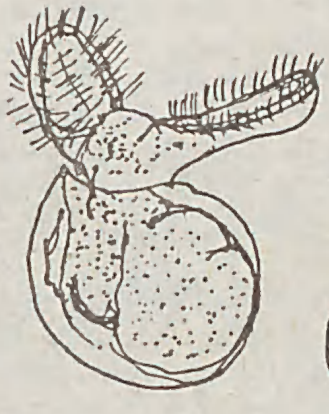


FIG 4

Hatched veliger X 200



Visceral mass appeared to be coiled with a shell —

INTERNATIONAL INTEREST IN CAIRNS MUDFLATS

by Dr. Roger Guard

There has been a marked increase in the study of wading birds throughout the world in recent years, brought about particularly by the need to obtain information relevant to their conservation. Habitat changes resulting from reclamation, industrial development, pollution and recreational activities have occurred at an ever increasing rate.

In February 1980 a meeting of the International Waterfowl Research Bureau (I.W.R.B.) was held in Japan and a representative from the National Parks and Wildlife Service in Australia attended. At this meeting the desirability of a co-operative migratory wader study programme on the Asian/Pacific region was discussed.

The Commonwealth Government was favourably disposed towards such a scheme and has promised full backing for the study. As Australia is the main wintering area for the majority of the Arctic breeding waders migratory through the Asian/Pacific region, it has a particularly important role to play in the study. In Australia a number of wader studies, principally counting and banding, have in fact been under way for several years under the leadership of Dr. Clive Minton from the Victorian Wader Study Group.

In order to expand these studies and integrate them with an International effort, a meeting was held in Melbourne on 22nd August last year at which representatives from all states of Australia and New Zealand and Papua-New Guinea attended. I was there as a Queensland representative on behalf the the Cairns branch of the Wildlife Preservation Society of Queensland.

In Queensland, the Cairns mud flats have been chosen as the most suitable site in Northern Australia to conduct regular counting studies of waders. Although the environment of the mud flats is a little artificial in that mangrove seedlings are regularly removed, it has proven to be one of the richest sites for bird life in Northern Australia with over 100 species recorded, both waders and non-waders. It is in fact internationally recognized among bird observing groups,and the Audubon Society of America organizes a trip every year for its members to visit, along with some other sites, the Cairns mud flats.

The mangrove stands on the north and south ends of the flats provide the necessary shelter and roosting sites for birds and the mud flats provide their feeding requirements. The accessibility of the site for both residents and tourists makes it an ideal area for observing and counting and the birds, being used to seeing humans, are less easily disturbed than at many more remote areas.

Cairns' geographical location makes it an important site in this international study because, for many waders, Cairns is their portal of entry to Australia and their annual early summer arrival from the Arctic is first recorded at Cairns before they move to N.S.W. and Victorian sites. For some other wading species, Cairns and Darwin will be the only areas recording them since they do not move down to the southern states.

Regular bird counts have now been in progress at Cairns for two years. The results of these studies will be co-ordinated by the recently appointed full time Scientific Project Organizer working for the Royal Australasian Ornithologists Union. This body agreed at the Melbourne meeting to support and organize the Australian section of the study.

Some very interesting information has already been obtained from the banding and counting studies. However we really know very little as yet about these amazing little birds who during their lives will fly thousands of miles from the Arctic to the south of Australia and will on their way live for some time on our mud flats. Hence the importance of preserving the flats, in addition to their obvious value as a marine life hatchery.

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